What is claimed is:

1. A propylene/1-butene random copolymer (PBR) characterized by containing

(1) 60 to 90 mol% of units derived from propylene and 10 to 40 mol% of units derived from 1-butene,

and having

(2) a triad isotacticity, as determined from a $^{13}C$-NMR spectrum, of not less than 85% and not more than 97.5 %,

(3) a molecular weight distribution (Mw/Mn), as determined by gel permeation chromatography (GPC), of from 1 to 3,

(4) an intrinsic viscosity, as measured in decalin at 135°C, of from 0.1 to 12 dl/g,

(5) a melting point (Tm), as measured on a differential scanning calorimeter, of from 40 to 120°C, and satisfying

(6) the following relation

$$146 \exp(-0.022M) \geqq Tm \geqq 125 \exp(-0.032M)$$

wherein Tm represents a melting point and M (mol%) represents a content of 1-butene constituent units.

2. A propylene elastomer (PBER) characterized by containing:

(1) (a) 50 to 85 mol% of units derived from propylene,

(b) 5 to 25 mol% of units derived from 1-butene

and

(c) 10 to 25 mol% of units derived from ethylene,

and having:

a molar ratio of propylene content to ethylene content of from 89/11 to 70/30, and

a modulus in tension (YM), as measured in accordance with JIS 6301, of not more than 40 Mpa.

3. A polypropylene composition comprising:

5 to 95 wt% of polypropylene (PP-A)

and

95 to 5 wt% of a propylene/1-butene random copolymer (PBR) characterized by containing

(1) 60 to 90 mol% of units derived from propylene and 10 to 40 mol% of units derived from 1-butene,

and having

(2) a triad isotacticity, as determined from a $^{13}C$-NMR spectrum, of not less than 85% and not more than 97.5 %,

(3) a molecular weight distribution (Mw/Mn), as determined by gel permeation chromatography (GPC), of from 1 to 3,

(4) an intrinsic viscosity, as measured in decalin at 135°C, of from 0.1 to 12 dl/g,

(5) a melting point (Tm), as measured on a differential

scanning calorimeter, of from 40 to 120°C, and satisfying

(6) the following relation

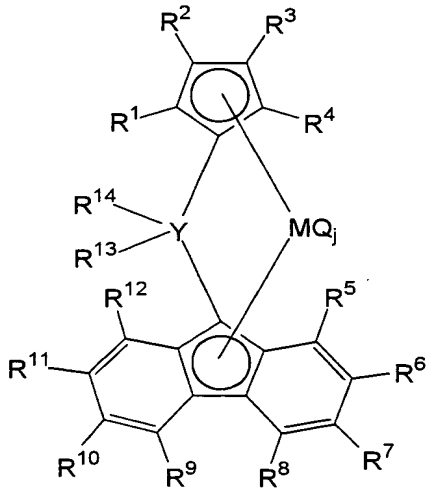
$$146 \exp(-0.022M) \geqq Tm \geqq 125 \exp(-0.032M)$$

wherein Tm represents a melting point and M (mol%) represents a content of 1-butene constituent units.

4. A sheet or film comprising a polypropylene composition as claimed in claim 3.

5. A stretched film obtainable by stretching a sheet or film as claimed in claim 4 in at least one direction.

6. A transition metal compound (2a) represented by the following formula (2a):




(2a)

wherein each of $R^1$ and $R^3$ is hydrogen, $R^2$ and $R^4$ are identically or differently selected from a hydrocarbon group and

silicon-containing group, $R^5$, $R^6$, $R^7$, $R^8$, $R^9$, $R^{10}$, $R^{11}$, $R^{12}$ and $R^{13}$ are identically or differently selected from hydrogen, a hydrocarbon group and silicon-containing group, and adjacent substituent groups $R^5$ to $R^{12}$ may be linked to form a ring, $R^{14}$ is an aryl group, and $R^{13}$ and $R^{14}$ may be identical or different each other and may be linked to form a ring. M is a Group 4 transition metal, Y is a carbon atom, Q may identically or differently be selected from halogen, a hydrocarbon group, anion ligand or neutral ligand capable of coordination with a lone pair of electrons, and j is an integer of 1 to 4.

7. A transition metal compound (3a) according to claim 6, wherein each of $R^{13}$ and $R^{14}$ in the formula (2a) is simultaneously an aryl group.

8. An olefin polymerization catalyst comprising:

(A) a transition metal compound (2a) or (3a) and

(B) at least one compound selected from:

(B-1) an organometallic compound,

(B-2) an organoaluminum oxy compound and

(B-3) a compound capable of forming an ion pair by reacting with the transition metal compound (A).

9. A polyolefin resin composition comprising:

100 parts by weight of a propylene polymer (PP-C) and not less than 10 parts by weight of at least one elastomer selected from elastomers (EL-1) to (EL-4) obtainable by a metallocene catalyst,

wherein the elastomer (EL-1)is

I) a propylene and ethylene random copolymer in a molar ratio of constituent units derived from propylene to constituent units derived from ethylene of from 80/20 to 20/80, and has

II) an intrinsic viscosity [η] of not less than 1.5 dl/g,

III) a ratio (Mw/Mn) of a weight average molecular weight(Mw) to a number average molecular weight (Mn), as measured by gel permeation chromatography (GPC), of from 1.0 to 3.5, and

IV) a ratio of an irregularly bonded propylene monomer based on 2,1-insertion to all the propylene constituent units, as determined from a $^{13}C$-NMR spectrum, of not more than 1.0 mol%;

the elastomer (EL-2) is

I) a random copolymer of ethylene and an α-olefin having 4 to 20 carbon atoms in a molar ratio of constituent units derived from ethylene to constituent units derived from α-olefin of from 80/20 to 20/80, and has

II) an intrinsic viscosity [η] of not less than 1.5 dl/g,

III) a ratio (Mw/Mn) of a weight average molecular

weight(Mw) to a number average molecular weight (Mn), as measured by gel permeation chromatography (GPC), of from 1.0 to 3.5, and

IV) a ratio of an irregularly bonded α-olefin monomer based on 2,1-insertion to all the α-olefin constituent units, as determined from a $^{13}C$-NMR spectrum, of not more than 1.0 mol%;

the elastomer (EL-3) is

I) a random copolymer of propylene and an α-olefin having 4 to 20 carbon atoms in a molar ratio of constituent units derived from propylene to constituent units derived from α-olefin of from 80/20 to 20/80, and has

II) an intrinsic viscosity [η] of not less than 1.5 dl/g,

III) a ratio (Mw/Mn) of a weight average molecular weight(Mw) to a number average molecular weight (Mn), as measured by gel permeation chromatography (GPC), of from 1.0 to 3.5,

IV) a ratio of an irregularly bonded propylene monomer based on 2,1-insertion to all the propylene constituent units, as determined from a $^{13}C$-NMR spectrum, of not more than 1.0 mol%, and

V) a melting point, as measured on DSC, of not higher than 150°C or not measured;

the lastomer (EL-4) is

I) a random copolymer of ethylene, propylene and an

α-olefin having 4 to 20 carbon atoms in a molar ratio of constituent units derived from propylene to constituent units derived from α-olefin of from 80/20 to 20/80, and has

II) a molar ratio [(EP) / (OL)] of constituent units (EP) derived from ethylene and propylene to constituent units (OL) derived from α-olefin having 4 to 20 carbon atoms of from 99/1 to 20/80,

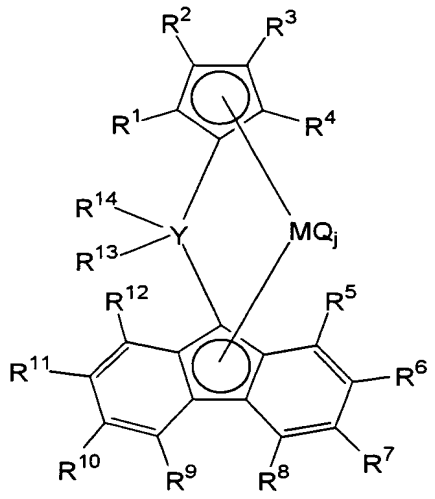
III) an intrinsic viscosity [η] of not less than 1.5 dl/g,

III) a ratio (Mw/Mn) of a weight average molecular weight(Mw) to a number average molecular weight (Mn), as measured by gel permeation chromatography (GPC), of from 1.0 to 3.5,

IV) a ratio of an irregularly bonded propylene monomer based on 2,1-insertion to all the propylene constituent units, as determined from a $^{13}$C-NMR spectrum, of not more than 1.0 mol%, and a ratio of an irregularly bonded α-olefin monomer based on 2,1-insertion to all the α-olefin constituent units, as determined from a $^{13}$C-NMR spectrum, of not more than 1.0 mol%; and

the metallocene catalyst comprises:

a transition metal compound (1a) represented by the following formula (1a)




(1a)

in which $R^3$ is selected from a hydrocarbon group and silicon-containing group; $R^1$, $R^2$ and $R^4$ are identically or differently selected from hydrogen, a hydrocarbon group and silicon-containing group; $R^5$, $R^6$, $R^7$, $R^8$, $R^9$, $R^{10}$, $R^{11}$, $R^{12}$, $R^{13}$ and $R^{14}$ are identically or differently selected from hydrogen, a hydrocarbon group and silicon-containing group; adjacent substituent groups $R^5$ to $R^{12}$ may be linked each other to form a ring; $R^{13}$ and $R^{14}$ may be the same or different each other and may be linked to form a ring; M is a Group 4 transition metal; Y is a carbon atom; Q may be identically or differently selected from halogen, a hydrocarbon group, anion ligand or neutral ligand capable of coordination with a lone pair of electrons, and j is an integer of 1 to 4,

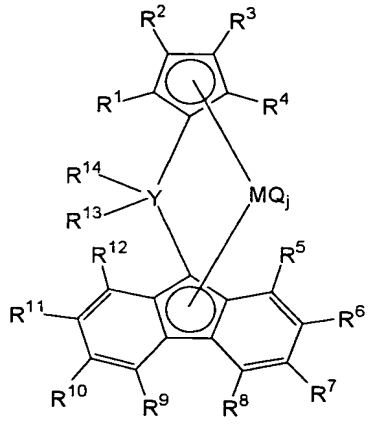
an organoaluminum oxy-compound (1b) and/or

a compound (2b) capable of forming an ion pair by reacting the transition metal compound (1a) and optionally

an organoaluminum compound (c).

10. The propylene/1-butene copolymer according to claim 1 obtainable by polymerizing propylene and 1-butene in the presence of an olefin polymerization catalyst comprising:

a transition metal compound (1a) represented by the following formula (1a)




(1a)

in which $R^3$ is selected from a hydrocarbon group and silicon-containing group; $R^1$, $R^2$ and $R^4$ are identically or differently selected from hydrogen, a hydrocarbon group and silicon-containing group; $R^5$, $R^6$, $R^7$, $R^8$, $R^9$, $R^{10}$, $R^{11}$, $R^{12}$, $R^{13}$ and $R^{14}$ are identically or differently selected from hydrogen, a hydrocarbon group and silicon-containing group; adjacent substituent groups $R^5$ to $R^{12}$ may be linked each other to form a ring; $R^{13}$ and $R^{14}$ may be the same or different each other and may be linked to form a ring; M is a Group 4 transition metal; Y is a carbon atom; Q may be identically or differently selected

from halogen, a hydrocarbon group, anion ligand or neutral ligand capable of coordination with a lone pair of electrons, and j is an integer of 1 to 4; and j is an integer of 1 to 4,

an organoaluminum oxy-compound (1b) and/or

a compound (2b) capable of forming an ion pair by reacting the transition metal compound (1a) and optionally

an organoaluminum compound (c).

11. A polypropylene composite film comprising:

(I) a crystalline polypropylene layer and

(II) a layer of a polypropylenen composition (II) laminated on at least one surface of the layer (I),

wherein the polypropylene composition (CC-2) comprises:

0 to 95 % by weight of a crystalline polyproplylene (PP-A) and

5 to 100 % by weight of a propylene/1-butene random copolymer (PBR):

(1) containing 60 to 90 mol% of units derived from propylene and 10 to 40 mol% of units derived from 1-butene, and having

(2) a triad isotacticity, as determined from a $^{13}C$-NMR spectrum, of not less than 85% and not more than 97.5 %,

(3) a molecular weight distribution (Mw/Mn), as determined by gel permeation chromatography (GPC), of from 1

to 3,

(4) an intrinsic viscosity, as measured in decalin at 135°C, of from 0.1 to 12 dl/g,

(5) a melting point (Tm), as measured on a differential scanning calorimeter, of from 40 to 120°C, and satisfying

(6) the following relation

$$146 \exp(-0.022M) \geqq Tm \geqq 125 \exp(-0.032M)$$

wherein Tm represents a melting point and M (mol%) represents a content of 1-butene constituent units.

12. A stretched film obtainable by stretching the laminate as claimed in claim 11 in at least one direction.